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EXAMINER	
HAROON, ADEEL	

ART UNIT	PAPER NUMBER
2685	

DATE MAILED: 02/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/674,823	IDE, TERUJI	
	Examiner	Art Unit	
	Adeel Haroon	2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,9-15 and 17* is/are rejected.

7)☐ Claim(s) *7,8,16 and 18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the rate-converted broad band signal" in lines 3-4 of Claim page 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-6, 9-12, 15, and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Suominen (U.S. 6,427,068).

With respect to claim 1, Suominen discloses a receiver, element number 10, which converts a band to a base band by a local oscillator of a quadrature carrier wave signal to perform demodulation processing in figure 8 (Column 1, lines 11-18). Suominen discloses a broad band limiting section, element number 18, which limits the band with respect to a received signal in a broad band (Column 4, lines 27-29). Suominen also discloses a first frequency conversion section, element numbers 20 and 22, which converts a frequency of the band-limited received signal into that of a low frequency band at a local oscillation frequency having an offset with respect to a reception frequency (Column 4, lines 33-42). Suominen's invention includes a digital conversion section, element numbers 30 and 32, which converts the frequency-converted received signal to a digital signal at a specific sampling frequency (Column 10, lines 1-5). Suominen teaches an image rejection section, element numbers 38, 40 and 64, which subjects the digital signal to image rejection processing (Column 14, lines 11-15). Suominen also teaches a narrow band limiting section, element number 66,

which extracts a narrow band signal of a desired wave from an image-rejected broad band signal (Column 14, lines 60-64). Suominen further discloses a second and third frequency conversion section, element number 70, which performs frequency conversion processing to remove the offset from the narrow band signal and reduces the frequency with respect to the image-rejected signal (Column 14, line 64 – Column 15, line 4). Moreover, Suominen discloses a rate conversion section, element numbers 72 and 74, which subjects an output from the third frequency conversion section to rate conversion to lower the sampling frequency (Column 15, lines 4-11).

With respect to claim 2, Suominen further discloses that the plurality of sets of the image rejection section, third frequency conversion section, and rate conversion section are continuously connected and disposed (Column 2, lines 20-27).

With respect to claims 3 and 4, Suominen further discloses that the image rejection section comprises Hilbert filter, element number 30, which subjects a quadrature component of the inputted digital signal to 90-degrees-phase shift processing by HILBERT conversion; a delay unit, element number 40, which delays and outputs an in-phase component of the inputted digital signal by the same time as a delay time in the HILBERT filter; and an adder, element number 64, which performs addition or subtraction with respect to outputs from the HILBERT filter and delay unit (Column 14, lines 11-15).

With respect to claims 5 and 6, Suominen further discloses that the rate conversion section is a decimation filter, which lowers the sampling frequency by decimation-in-time processing (Column 15, lines 4-11).

With respect to claim 9, Suominen discloses a receiver, element number 10, which converts a band to a base band by a local oscillator of a quadrature carrier wave signal to perform demodulation processing in figure 8 (Column 1, lines 11-18). Suominen discloses a first frequency conversion section, element numbers 20 and 22, which converts a frequency of the band-limited received signal into that of a low frequency band at a local oscillation frequency having an offset with respect to a reception frequency (Column 4, lines 33-42). Suominen's invention includes an analog-digital conversion section, element numbers 30 and 32, which converts the frequency-converted received-signal to a digital signal from an analog signal (Column 10, lines 1-5). Suominen also discloses a phase deviation correction processing section which corrects a phase deviation of the signal converted to the digital signal (Column 12, lines 59-62). Suominen teaches an image rejection section, element numbers 38, 40 and 64, which subjects the digital signal to image rejection processing (Column 14, lines 11-15). Suominen also teaches a narrow band limiting section, element number 66, which extracts a narrow band signal of a desired wave from an image-rejected broad band signal (Column 14, lines 60-64). Suominen further discloses a second frequency conversion section, element number 70, which performs frequency conversion processing to remove the offset from the narrow band signal (Column 14, line 64 – Column 15, line 4).

With respect to claim 10, Suominen discloses a receiver, element number 10, which converts a band to a base band by a local oscillator of a quadrature carrier wave signal to perform demodulation processing in figure 8 (Column 1, lines 11-18).

Suominen discloses a first frequency conversion section, element numbers 20 and 22, which converts a frequency of the band-limited received signal into that of a low frequency band at a local oscillation frequency having an offset with respect to a reception frequency (Column 4, lines 33-42). Suominen's invention includes an analog-digital conversion section, element numbers 30 and 32, which converts the frequency-converted received-signal to a digital signal from an analog signal (Column 10, lines 1-5). Suominen also discloses an amplitude deviation correction processing section, which corrects an amplitude deviation with respect to the signal converted to the digital signal (Column 12, lines 66-67). Suominen teaches an image rejection section, element numbers 38, 40 and 64, which subjects the digital signal to image rejection processing (Column 14, lines 11-15). Suominen also teaches a narrow band limiting section, element number 66, which extracts a narrow band signal of a desired wave from an image-rejected broad band signal (Column 14, lines 60-64). Suominen further discloses a second frequency conversion section, element number 70, which performs frequency conversion processing to remove the offset from the narrow band signal (Column 14, line 64 – Column 15, line 4).

With respect to claim 11, Suominen discloses a receiver, element number 10, which converts a band to a base band by a local oscillator of a quadrature carrier wave signal to perform demodulation processing in figure 8 (Column 1, lines 11-18). Suominen discloses a first frequency conversion section, element numbers 20 and 22, which converts a frequency of the band-limited received signal into that of a low frequency band at a local oscillation frequency having an offset with respect to a

reception frequency (Column 4, lines 33-42). Suominen's invention includes an analog-digital conversion section, element numbers 30 and 32, which converts the frequency-converted received-signal to a digital signal from an analog signal (Column 10, lines 1-5). Suominen also discloses a phase deviation correction processing section which corrects a phase deviation of the signal converted to the digital signal (Column 12, lines 59-62). Suominen further discloses an amplitude deviation correction processing section, which corrects an amplitude deviation with respect to the signal converted to the digital signal (Column 12, lines 66-67). Suominen teaches an image rejection section, element numbers 38, 40 and 64, which subjects the digital signal to image rejection processing (Column 14, lines 11-15). Suominen also teaches a narrow band limiting section, element number 66, which extracts a narrow band signal of a desired wave from an image-rejected broad band signal (Column 14, lines 60-64). Suominen further discloses a second frequency conversion section, element number 70, which performs frequency conversion processing to remove the offset from the narrow band signal (Column 14, line 64 – Column 15, line 4).

With respect to claim 12, Suominen further discloses a phase deviation correction processing section in figure 16 that multiplies in-phase and quadrature components of the inputted digital signal to detect the-phase deviation, multiplies the detected phase deviation by the in-phase component, and subtracts a multiplied result from the quadrature component to obtain a quadrature output (Column 13, lines 1-14).

With respect to claims 15 and 17, Suominen further discloses that the image rejection section comprises Hilbert filter, element number 30, which subjects a

quadrature component of the inputted digital signal to 90-degrees-phase shift processing by HILBERT conversion; a delay unit, element number 40, which delays and outputs an in-phase component of the inputted digital signal by the same time as a delay time in the HILBERT filter; and an adder, element number 64, which performs addition or subtraction with respect to outputs from the HILBERT filter and delay unit (Column 14, lines 11-15).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suominen in view of Hughes et al. (U.S. 6,654,594).

With respect to claim 13, the receiver of Suominen is described above in the discussion of claim 10. Suominen teaches correcting amplitude deviation (Column 12, lines 66-67) but does not expressly disclose using the difference between the square values of the in-phase and quadrature components. However, Hughes et al. disclose an amplitude deviation correction receiver thus making it analogous art since it is in the

same field of endeavor. Hughes et al. teach using the difference between the square values of the I and Q components of the inputted digital signals as an amplitude deviation value and multiplying the value with a value proportional to an input amplitude to obtain a corrected output (Column 3, lines 3-16). Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to use Hughes et al.'s amplitude deviation correction technique in the receiver of Suominen in order to better correct the amplitude deviation with the use of a magnitude generator.

With respect to claim 14, the receiver of Suominen is described above in the discussion of claim 11. Suominen further discloses a phase deviation correction processing section in figure 16 that multiplies in-phase and quadrature components of the inputted digital signal to detect the-phase deviation, multiplies the detected phase deviation by the in-phase component, and subtracts a multiplied result from the quadrature component to obtain a quadrature output (Column 13, lines 1-14). Suominen teaches correcting amplitude deviation (Column 12, lines 66-67) but does not expressly disclose using the difference between the square values of the in-phase and quadrature components. However, Hughes et al. disclose an amplitude deviation correction receiver thus making it analogous art since it is in the same field of endeavor. Hughes et al. teach using the difference between the square values of the I and Q components of the inputted digital signals as an amplitude deviation value and multiplying the value with a value proportional to an input amplitude to obtain a corrected output (Column 3, lines 3-16). Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to use Hughes et al.'s

amplitude deviation correction technique in the receiver of Suominen in order to better correct the amplitude deviation with the use of a magnitude generator.

Allowable Subject Matter

8. Claims 7 and 8 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. The specific structure of the frequency conversion section and Hilbert filter was neither found nor fairly suggested in the prior art.

9. Claims 16 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The specific structure of the complex coefficient filter was neither found nor fairly suggested in the prior art.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Casagrande (U.S. 6,563,887) disclose a direct conversion receiver using rate conversion system with decimation filters. Ciccarelli et al. (U.S. 6,785,529) discloses a receiver with an image rejection section.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adeel Haroon whose telephone number is (571) 272-7405. The examiner can normally be reached on Monday thru Friday, 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on (571) 272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AH
2/13/06

Nguyen Vo
2-15-2006

NGUYEN T. VO
PRIMARY EXAMINER